

ABSTRACT

This invention comprises cellular vaccines and methods of using them in cancer immunotherapy, particularly in humans. The vaccines comprise a source of tumor-associated antigen, and a cytokine-secreting cell line. Tumor antigen may be provided in the form of primary tumor cells, tumor cell lines or tumor extracts prepared from the subject. In certain embodiments of the invention, the cytokine-secreting line is a separate tumor line that is allogeneic to the patient and genetically altered so as to produce a cytokine at an elevated level. Exemplary cytokines are IL-4, GM-CSF, IL-2, TNF- $\alpha$ , and M-CSF in the secreted or membrane-bound form. In these embodiments, the cytokine-producing cells provide immunostimulation in *trans* to generate a specific immune response against the tumor antigen. Vaccines may be tailored for each type of cancer or for each subject by mixing tumor antigen with a favorable number of cytokine-producing cells, or with a cocktail of such cells producing a plurality of cytokines at a favorable ratio.

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